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PLANETARY PHENOMENA FOR JANUARY AND FEBRUARY, 1919

MALCOLM MCNEILL

PHASES OF THE MOON, PACIFIC TIME

New Moon....	Jan.	2,	12^h	24^m	A. M.	New Moon...	Jan.	31,	3^h	7^m P. M.
First Quarter..	"	9,	2	55	A. M.	First Quarter..	Feb.	7,	10	52 A. M.
Full Moon....	"	16,	12	44	A. M.	Full Moon....	"	14,	3	38 P. M.
Last Quarter..	"	23,	8	22	P. M.	Last Quarter..	"	22,	5	48 P. M.

The Earth is in perihelion, that is, is nearest the Sun, at 1 A. M. January 3, Pacific Time.

Mercury on January 1st is a morning star, rising not quite two hours before sunrise, and is therefore in fine position for observation in the morning twilight. The apparent distance of planet from Sun increases slightly up to January 7th, when greatest west elongation, 23°, is reached; but the interval between the rising of the planet and of the Sun does not shorten materially until after the middle of the month. After that the increase is rapid, and on February 23rd the planet passes superior conjunction with the Sun, becoming an evening star. During its period of visibility the planet does not pass near any stars bright enough to be conspicuous in the morning twilight.

Venus passed superior conjunction with the Sun and became an evening star late in November, 1918, but does not get far enough away from the Sun to become a conspicuous evening object until after January 1st, the interval between sunset and the setting of the planet being less than an hour until the middle of the month. By the end of February the interval has increased to nearly two hours. During the two months' period it moves about 72° eastward and 24° northward thru *Capricorn*, *Aquarius*, and into *Pisces*, passing no conspicuous stars. On February 26th it passes 1° south of the vernal equinox. It is in conjunction with *Uranus* on the evening of January 30th, *Venus* being not quite one degree south. It is also in conjunction with *Mars* on February 13th. At the time of nearest approach *Venus* will be a little more than the Sun's apparent diameter south of *Mars*.

Mars will not be a conspicuous object during the present year, altho it may be seen during the greater part of the year. On January 1st it sets not quite two and one-half hours after sunset, and this interval diminishes rather more than an hour by the end of February; still it will be visible thruout the period in the evening twilight under normal weather conditions. The relative motions of *Mars* and the Sun thru the early part of the year cause the planet to set at almost the same clock time from January 1st to May 1st, the entire difference between earliest and latest being only six minutes. At the same time the apparent distance from planet to Sun has diminished from over 30° to about 2°. The diminution of distance during January and February is about 9°, and the local mean time of setting ranges from $7^h\ 2^m$ to $7^h\ 5^m$ P. M. During 1919 *Mars* will be on the far side of its orbit from the Earth and its distance is never less than 200 millions of miles, and at its maximum distance in June it will be 233 millions. Its brightness will therefore be small, not greatly different from that of the Pole Star, and it will not fluctuate much. During January and February it moves about 44° eastward and 17° northward from *Capricorn*, thru *Aquarius*, into *Pisces*. On January 21st it is in conjunction with *Uranus*, the latter being about two-thirds of the Sun's apparent diameter to the north. Its conjunction with *Venus* on February 13th has been mentioned.

Jupiter is in fine position for evening observation, as it comes to opposition with the Sun on January 1st and is then above the horizon thruout the entire night. By the end of February it will set shortly after 3 A. M. During the period its motion among the stars is about 5° westward, retrograde, in *Gemini*, south and west of *Castor* and *Pollux*, the principal stars of the constellation.

Saturn is not in quite as good a position for evening observation as is *Jupiter*, as it rises later, at about half after eight on January 1st. It rises earlier each night, however, and by the end of February it will rise before sunset. It comes to opposition with the Sun on February 14th. Its motion during the two months is retrograde, westward, about 4° in *Leo*. Early in January the planet is very close to the first magnitude star, *Regulus*, a little more than one degree north and west. As seen in the telescope the minor axis of the rings is gradually diminishing altho up to April there is a slight increase. The average breadth of the minor axis is a little less than one-fourth that of the major.

Uranus is in the southwestern sky in the early evening but is a little too near the Sun for easy observation. It is on the border line of *Capricorn* and *Aquarius* and moves about 3° eastward. Its conjunction with *Venus* on January 30 has already been mentioned. It passes conjunction with the Sun and becomes a morning star on the morning of February 17th.

Neptune, too faint to be seen without a telescope, is retrograding in the constellation *Cancer*, and comes to opposition with the Sun on January 28th.